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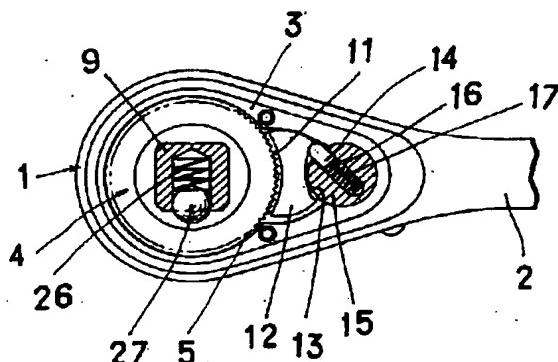
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(54)【発明の名称】 ラチェットレンチ

(57)【要約】

【課題】 従来のようにラチェット歯も係止爪も欠けることがなく、爪軸も折れない堅牢なラチェットレンチを提供すること。

【解決手段】 回転子に形成したラチェット歯の複数に噛み合う歯列を備えた爪片を設け、爪片を歯列反対側の歯切替凹面に圧接するピンを操作して歯列を左右切替えラチェット歯との噛み合い位置を変え、角軸の回動方向を切替えること。



【特許請求の範囲】

【請求項1】 全周にラチエット歯を施した回転歯部と、その上下面に設けた嵌合頸部と、一方の嵌合頸部表面に突設した角軸とから成る回転子を、ハンドルの先端側のレンチ本体に形成した環状孔に収容し、環状孔の残余の部分に前記ラチエット歯の複数の歯に対し同時に近接して対向する歯列を備えた爪片と、爪片の歯列の反対側の歯切替凹面に圧接する切替ピンを摺嵌した切替え軸とを収容し、切替え軸に操作レバーを取付けたラチエットレンチ。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明はラチエットレンチに関するものである。

【0002】

【従来の技術】 従来のラチエットレンチは、棒状の係止爪の先端にラチエット歯を係止させるためラチエット歯も係止爪も欠け、係止爪を左右に切替る爪軸が折れる欠点があった。

【0003】

【発明が解決しようとする課題】 本発明の課題は、前記従来例の欠点を除き、ラチエット歯も係止爪も欠けることなく、爪軸も折れることのないラチエットレンチを提供することにある。

【0004】

【課題を解決するための手段】 本発明の手段は次のとおりである。

【0005】 全周にラチエット歯を施した回転歯部と、その上下面に設けた嵌合頸部と、一方の嵌合頸部表面に突設した角軸とから成る回転子を、ハンドルの先端側のレンチ本体に形成した環状孔に収容し、環状孔の残余の部分に前記ラチエット歯の複数の歯に対し同時に近接して対向する歯列を備えた爪片と、爪片の歯列の反対側の歯切替凹面に圧接する切替ピンを摺嵌した切替え軸とを収容し、切替え軸に操作レバーを取付けたラチエットレンチ。

【0006】

【発明の実施の形態】 本発明に係るラチエットレンチの具体例を図面について説明する。図中1はハンドル2の先端側に一体に設けたレンチ本体で、卵型の環状孔3を形成し、回転子4を収容する。回転子4は全周にラチエット歯5を施した円形回転歯部6と、その上下両面に一体に設けた嵌合頸部7、8と、一方の嵌合頸部7に突設した角軸9とから構成される。又環状孔3にラチエット歯5の複数の歯に同時に接近して対向する歯列11を有する爪片12を収容し、さらに爪片12の歯列11と反対側の歯切替凹面13に圧接するピン14を摺嵌した切替え軸15を入れる。切替え軸15は図3に示すようにコイルばね16とピン14が入る横穴17を備えており、コイルばね16でピン14を押し、その先が歯切替

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凹面13の左右両端の係止鈎部13a、13bに係止する。(図7参照)そして切替え軸15に操作レバー18を嵌める係止突起19を突設し、操作レバー18を左右に操作すると、切替え軸15は協動し、弯曲した歯切替凹面13に沿ってピン14は移動して両端の係止鈎部13a又は13bにピン14が係止すると、爪片12の歯列11の右又は左側がラチエット歯5に噛み合いハンドル2の回動による角軸9の回転方向は切替えられる。尚図中23は環状孔3に形成した回転子4の嵌合頸部8が嵌まる凹部、24は環状孔3に施した蓋、25は角軸9の一面のポール収容穴で、コイルばね26とポール27を入れてポール27の表面を角軸9より突出させる。

【0007】

【作用】 操作レバー18を左右に作動させれば、ピン14は動き、ピン14の先は爪片12の平板状の広い面によりストップ突子20又は21にあたるまで動き、かくして爪片12は傾き、歯列11のラチエット歯5に噛み合う位置を変え、ハンドル2により角軸9の回転方向を切替る。

【0008】

【発明の効果】 本発明によれば、平板状の爪片12を左右に傾斜させることによって複数の歯が回転子4のラチエット歯に噛み合った状態で回転方向を切替ることができるので、ラチエット歯も爪片の歯も損傷しない。又爪片並びに切替え軸は堅牢で折れることはない。

【図面の簡単な説明】

【図1】 平面図。

【図2】 要部の側面図。

【図3】 要部の横断平面図。

【図4】 カバー板を取り外した裏面図。

【図5】 本体のみの縦断側面図。

【図6】 回転子の正面図。

【図7】 爪片の平面図。

【図8】 爪片の縦断側面図。

【図9】 切替え軸の縦断側面図。

【図10】 爪片切替時の横断平面図。

【符号の説明】

- | | |
|-----|--------|
| 1 | レンチ本体 |
| 2 | ハンドル |
| 3 | 環状孔 |
| 4 | 回転子 |
| 5 | ラチエット歯 |
| 6 | 円形回転歯部 |
| 7、8 | 嵌合頸部 |
| 9 | 角軸 |
| 11 | 歯列 |
| 12 | 爪片 |
| 13 | 歯切替凹面 |
| 14 | ピン |
| 15 | 切替え軸 |

(3)

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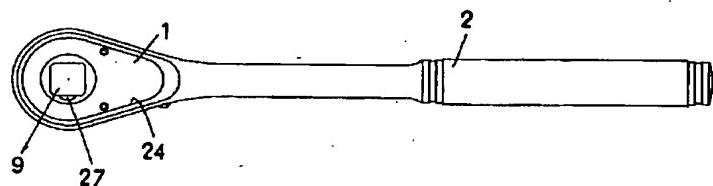
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- 16 コイルばね
17 横穴
19 係止突起
20、21 ストップ突子

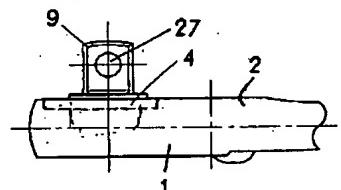
- * 25 ボール収容穴
26 コイルばね
27 ボール

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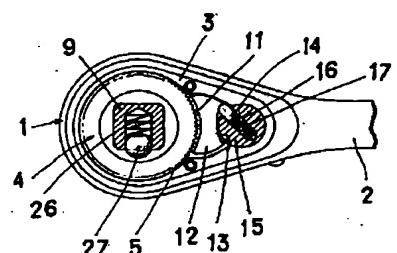
【図1】



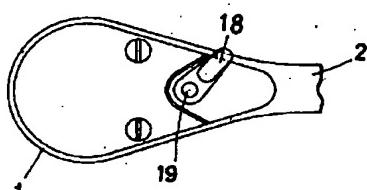
【図2】



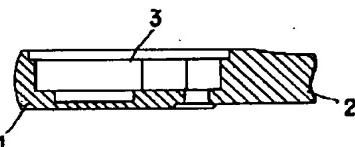
【図3】



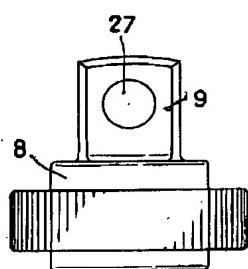
【図4】



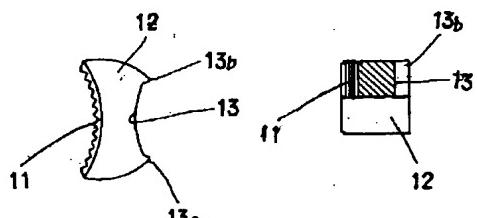
【図5】



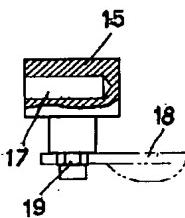
【図6】



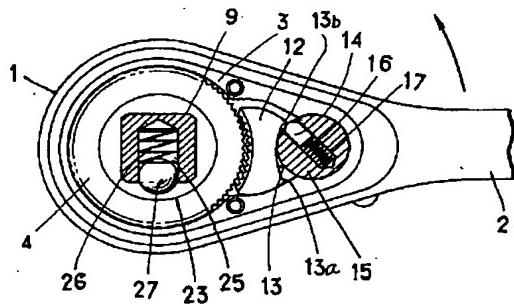
【図7】



【図8】



【図10】



PATENT ABSTRACTS OF JAPAN

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(54) [Name of the Invention]
RATCHET WRENCH

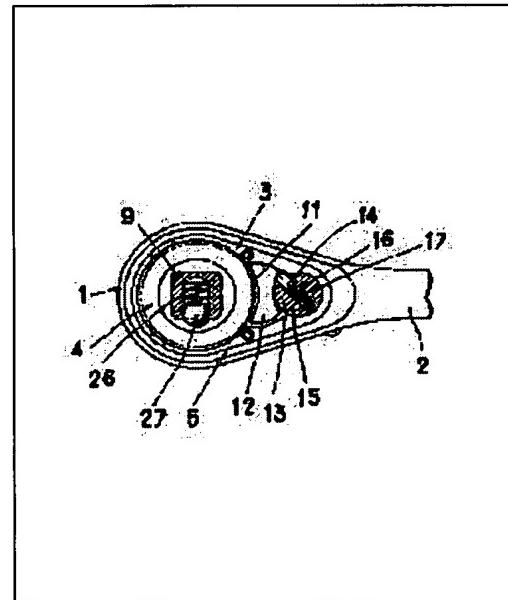
(57) ABSTRACT

[Technical Problem]

[The technical problem of this invention is] to offer a strong ratchet wrench in which the pawl shaft does not break down, without missing a ratchet teeth and a lock pawl like in conventional examples.

[Means for Solving the Problem]

Provide a pawl piece with a teeth line which engages with a plurality of ratchet gear teeth, operate a pin, which carries out a pressure on the pawl piece pressure-contacting it to the teeth changeover recessed face on the opposite side of the teeth line, change [operate] the teeth line to the right and left and change the location in which [it] engages with the ratchet gear teeth, and [thereby] change the rotation direction of the square shaft.



[Claim(s)]

[Claim 1]

A ratchet wrench, [wherein] a rotor, constituted of a circular rotary teeth part provided with ratchet teeth on the full circumference, and engaging neck parts integrated with upper and lower both face sides of it, and a square shaft projectingly provided on one side of the engaging neck [part], is received in the annular hole formed in the [main] body of the wrench by the extreme end side of a handle; [and]

a pawl piece equipped with a teeth line simultaneously approaching and opposing a plurality of teeth of the ratchet teeth is received in the front of the remaining part of the annular hole;
and a changeover shaft slidably fitted with a change pin, pressure-contacting with the teeth changeover recessed face on the opposite side of the teeth line of the pawl piece is put in;
and an operation lever is attached in the changeover shaft.

[Detailed Description of the Invention]

[0001]

[Field of the Invention]

This invention relates to a ratchet wrench.

[0002]

[Description of the Prior Art]

The conventional ratchet wrench lacked the ratchet teeth and lock pawl in order to stop a ratchet teeth at the extreme end of a rod-like lock pawl, and it had the fault that the pawl shaft which changes [turns/switches] the lock pawl to right and left can break.

X

[0003]

[Problem(s) to be Solved by the Invention]

The technical problem of this invention is to offer a ratchet wrench without the fault of said conventional example, wherein neither a ratchet teeth and a lock pawl are missing.

[0004]

[Means for Solving the Problem]

The means of this invention is as follows.

[0005]

A ratchet wrench, [wherein] a rotor, constituted of a circular rotary teeth part provided with ratchet teeth on the full circumference,
and engaging neck parts integrated with upper and lower both face sides of

it,
and a square shaft projectingly provided on one side of the engaging neck [part],
is received in the annular hole formed in the [main] body of the wrench by the extreme end side of a handle;
[and]
a pawl piece equipped with a teeth line simultaneously approaching and opposing a plurality of teeth of the ratchet teeth is received in the front of the remaining part of the annular hole;
and a changeover shaft slidably fitted with a change pin, pressure-contacting with the teeth changeover recessed face on the opposite side of the teeth line of the pawl piece is put in;
and an operation lever is attached in the changeover shaft.

[0006]

[Embodiment of the Invention]

An example of the ratchet wrench concerning this invention is explained with drawings.

In the drawings, 1 is the main body of the wrench incorporated in the extreme end side of handle 2, it forms the egg-shaped annular hole 3, and receives a rotor 4.

Rotor 4 consists of circular rotary teeth part 6 with ratchet teeth 5 on the full circumference, the engaging neck [parts] 7 and 8 integrated with the vertical side[s],

and square shaft 9 projectingly provided on one side engaging neck [part] 7.

Moreover, it [rotor 4] receives

a pawl piece 12 equipped with a row of teeth 11 which coincidently approaches and counters a plurality of gear teeth of the ratchet gear teeth 5 in the annular hole 3,

and a changeover shaft 15 slidably fitted with a change pin 14, pressure-contacting with the gear-teeth change concave surface 13 on the opposite side of the row of teeth 11 of the pawl piece 12.

As shown in drawing 3, the changeover shaft 15 is equipped with a set pin hole 17 containing coil spring 16 and pin 14, coil spring 16 presses pin 14, and the extreme end is locked with locking hook [parts] 13a and 13b on both the right-and-left ends of the gear-teeth change concave surface 13.

(Refer to drawing 7)

When the locking projection 19 which inserts a operation lever 18 in the changeover shaft 15 is protruded and operation lever 18 is operated right and left, changeover shaft 15 cooperates and pin 14 is moved along the teeth changeover recessed face 13, and when pin 14 is locked with locking hooks 13a or 13b on [its] both ends, pawl piece 12 will gear with the the right or left-hand side of the row of teeth 11 of the ratchet teeth 5, and by turning handle 2, the direction of the rotation of square shaft 9 will be changed.

Moreover in the figure[s] show

23 the groove into which the engaging neck [parts] 8 of the rotor 4 formed in the annular hole 3 is fitted, 24 the lid given to the annular hole 3, and 25 the ball receiving holes on the surface of square shaft 9, [with] coile spring 26 and a ball 27 putted in, the front face of ball 27 is projecting from square shaft 9.

[0007]

[Function]

If operation lever 18 [Original falsch: 16 – Übers.] is operated right and left, pin 14 moves, the top of pin 14 moves according to the plate-like large field of the pawl piece 12 until it hits the stop boss 20 or 21, and in this way, the pawl piece 12 will incline, and change the location in which [it] engages with the ratchet teeth 5 of row of teeth 11, and will change the rotation direction of square shaft 9 by the handle 2.

[0008]

[Effect of the Invention]

Since, according to this invention, a plurality of gear teeth can change the rotation direction in the condition of having geared with the ratchet teeth of rotor 4 by making the plate-like pawl piece 12 incline right and left, neither the gear teeth of the pawl piece nor the ratchet teeth gets damaged.

Furthermore the pawl piece and the changeover shaft are strong and do not break down.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] Top view.

[Drawing 2] The side elevation of an important section.

[Drawing 3] The crossing top view of an important section.

[Drawing 4] The rear-face Fig. which demounted the covering plate.

[Drawing 5] The vertical section side elevation of only a body.

[Drawing 6] The front view of a rotor.

[Drawing 7] The top view of the pawl piece.

[Drawing 8] The vertical section side elevation of the pawl piece.

[Drawing 9] The vertical section side elevation of the changeover shaft.

[Drawing 10] The crossing top view at the time of operating the pawl piece. X

[Description of Notations]

1 Wrench Main Body

2 Handle

3 Annular Hole

4 Rotor

5 Ratchet Teeth

6 Circular Rotary Teeth Part

7, 8 Engaging neck [parts]

9 Square Shaft

11 Teeth Line

12 Pawl Piece

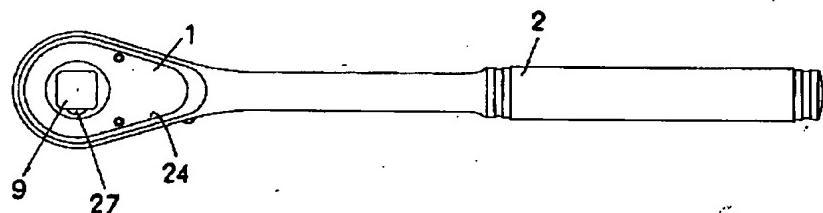
13 Teeth changeover recessed face

14 Pin

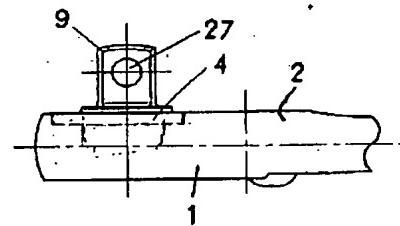
15 Changeover Shaft
16 Coil Spring
17 Set Pin Hole
[18 Operation Lever]
19 Locking Projection
20, 21 Stop boss
25 Ball Receiving Hole
26 Coil Spring
27 Ball

DRAWINGS

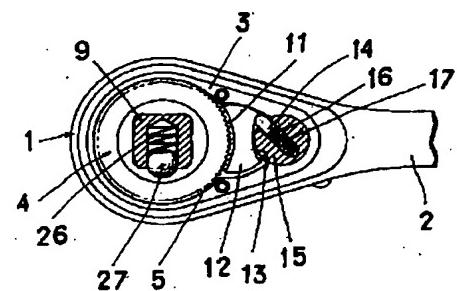
[Drawing 1]



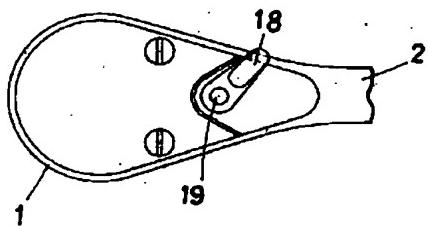
[Drawing 2]



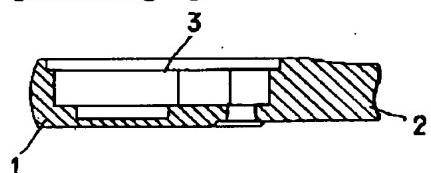
[Drawing 3]



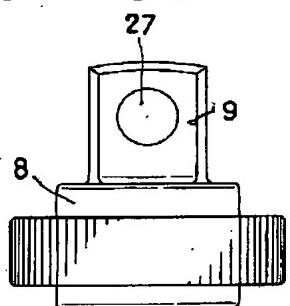
[Drawing 4]



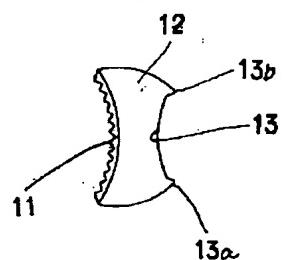
[Drawing 5]



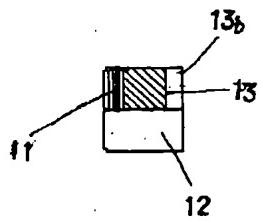
[Drawing 6]



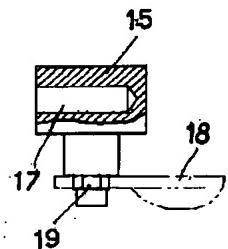
[Drawing 7]



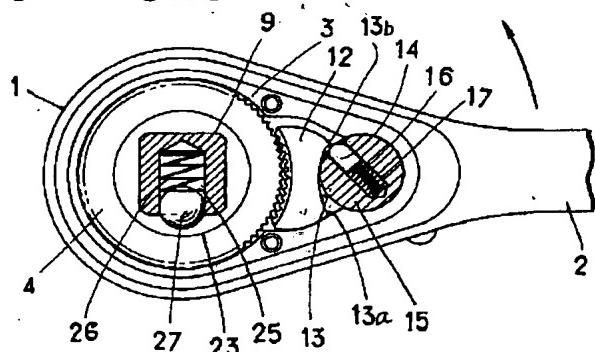
[Drawing 8]



[Drawing 9]



[Drawing 10]



[Drawing 10]

